

PUBLIC UTILITY DISTRICT NO. 1 of CHELAN COUNTY
P.O. Box 1231, Wenatchee, WA 98807-1231 • 327 N. Wenatchee Ave., Wenatchee, WA 98801
(509) 663-8121 • Toll free 1-888-663-8121 • www.chelanpud.org

June 1, 2011

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary, and
Nathaniel J. Davis, Sr., Deputy Secretary
FEDERAL ENERGY REGULATORY COMMISSION
888 First Street, NE
Washington, DC 20426

Re: **Lake Chelan Hydroelectric Project No. 637**
Article 404 – Lake Chelan Fishery Forum 2011 Annual Work Plan dated May 24, 2011

Dear Secretary Bose and Deputy Secretary Davis:

The Federal Energy Regulatory Commission (Commission) issued the “Order Modifying and Approving Lake Chelan Fishery Plan, Article 404” on December 4, 2007. The Plan satisfied the License Article 404 requirement of the “Order on Offer of Settlement and Issuing New License”¹ (License) and “Order on Rehearing”² for the Lake Chelan Hydroelectric Project (Project) on November 6, 2006, and April 19, 2007, respectively.

Under Ordering Paragraph (B) modifying the Plan under Article 404, Chelan PUD is required to file the following report with the Commission.

(B) The licensee shall file with the Commission by June 1, beginning 2008, their Annual Fish Stocking Report. If any recommended fish enhancement measures are proposed to be implemented in place of stocking, the licensee’s report shall be filed for Commission approval. The licensee shall allow the Lake Chelan Fisheries Forum 30 days to provide comments and/or recommendations on their report before filing the report with the Commission. The filing shall include comments and/or recommendations from the Lake Chelan Fisheries Forum and the licensee’s response to any comments. Based on review of the report, the Commission reserves the right to require changes to the project to ensure compliance with the license.

¹ 117 FERC ¶ 62,129

² 119 FERC ¶ 61,055

In accordance with the above Order requirement, Chelan PUD hereby files the Final Lake Chelan Fishery Forum 2011 Annual Work Plan (LCFF AWP), in which the detailed fish stocking measures are described in Section 3.2. No measures were proposed to be implemented in place of stocking.

On October 27, 2010 the Lake Chelan Fisheries Forum (LCFF) convened a meeting to initiate discussions regarding the fish stocking plan and management objectives, and drafting a plan for 2011. The National Park Service (NPS) provided the first draft of the plan to the LCFF in January 11, 2011. The Washington Department of Fish and Wildlife (WDFW) provided tables of fish stocked into Lake Chelan in 2010 and planned stocking levels for 2011 on January 12, 2011. Comments on the LCFF AWP were received from the NPS (May 4, 9 and 26 (via phone)), the USDA Forest Service (April 15), and the WDFW (May 24). Chelan PUD incorporated the comments into the final plan. On May 20, 2011, and June 1, 2011, Chelan PUD distributed the draft final work plan and the final work plan, respectively, to the LCFF.

Please do not hesitate to contact me or Jeff Osborn (509-661-4176) of my office regarding any questions or comments regarding this plan.

Sincerely,



Michelle Smith
Licensing and Compliance Manager
michelle.smith@chelanpud.org
(509) 661-4180

cc: Erich Gaedeke, FERC-PRO

Enclosure: Documentation of Consultation
Lake Chelan Fishery Forum 2011 Annual Work Plan, Final

DOCUMENTATION OF CONSULTATION

Lake Chelan Fishery Forum Meeting Minutes

Date: October 27, 2010
Time: 9:00 am – 12:00 noon
Location: Chelan PUD Headquarters, Wenatchee, WA
1st Floor Large Conference Room

Call in number: (509)661-4844, Password is 4000.

Meeting called by: Jeff Osborn,
Chelan PUD

Type of meeting: LCFF Meeting

Note taker: Debby Bitterman

LCFF Members

<u>Name</u>	<u>Agency</u>	<u>Phone</u>	<u>Email</u>
Jeff Korth	WDFW	509-754-4624 x39	Jeffrey.Korth@dfw.wa.gov
Tony Eldred	WDFW	509-662-0452	eldredte@dfw.wa.gov
Bruce Heiner	WDFW	509-332-0892	heinebah@dfw.wa.gov
Alex Martinez	USDA-FS	509-662-4335	ramartinez@fs.fed.us
Catherine Willard	USDA-FS	509-784-1151	cwillard@fs.fed.us
Reed Glesne (phone)	NPS	360- 854-7315	Reed_Glesne@nps.gov
Steve Lewis	USFWS	509-665-3508 x14	Stephen_Lewis@fws.gov
Pat Irlie	Ecology	509-454-7864	pir461@ecy.wa.gov
Jerry Marco	CCT	509-634-2114	jerry.marco@colvilletribes.com
Carl Merkle	CTUIR	541-966-2354	carlmerkle@ctuir.com
Bob Goedde	City of Chelan	509-682-8018	mayor@cityofchelan.com
Phil Archibald	LCSA	509-784-2471	
Jeff Osborn	Chelan PUD	509-661-4176	jeff.osborn@chelanpud.org
Steve Hays	Chelan PUD	509-661-4181	steve.hays@chelanpud.org

Attendees in BOLD

Meeting Purpose: Meeting of the Lake Chelan Fishery Forum to continue Lake Chelan license implementation

Minutes

Jeff Osborn welcomed everyone to the Lake Chelan Fishery Forum (LCFF) meeting.

The agenda was reviewed by the LCFF attendees.

2010 Annual Work Plan Review

In general, the meeting attendees agreed that 2011 Annual Work Plan should mirror the 2010 Annual Work Plan. In addition, the 2011 Annual Work Plan and future Work Plans need to provide a long-lasting history. Therefore, activities that were completed in the previous year will be updated briefly in the following Annual Work Plan. Jeff noted that the 2011 Work Plan is due January 10, 2011.

Jeff stated that the fish stocking activity is the only portion of the Annual Work Plan that requires FERC approval.

The Forum provided comments and recommendations to Reed Glesne, who will draft the 2011 Annual Work Plan. The following were sections of the Work Plan were discussed:

Section 2: Potential Monitoring and Evaluation Measures

LCFF agreed that in order to provide continuity in the report the "Estimated Budget and Schedule" tables should be moved from Section 2 to Section 3.

Action Item:

- Catherine will provide to Reed a summary of USDA-FS completed 2010 work and proposed 2011 work

Section 3

3.1 Bioenergetics Food Web Model Development

An update regarding The Lake Chelan Bioenergetics Food Web Report, noting that the Food Web Report is complete and has been posted on the Lake Chelan Implementation Web site. Language to that effect will be included in the 2011 Work Plan.

Action Item:

- Jeff will provide Reed with language regarding completion of the Food Web Model report.

3.2 Tributary Barrier Confirmation and Removal Planning

Jeff reported that Mitchell and Gold Creek construction will start in February and be completed no later than the end of March. Jeff also reported that Pat Powers would be available for consultation during Mitchell Creek and Gold Creek tributary barrier removal efforts, and encouraged LCFF members to participate in initial construction activities to ensure proper installation of stream rehabilitation measures (step pool boulder placement, back filling, etc.).

This section will be updated in the 2011 Work Plan.

Action Items:

- Jeff will verify the permit status.
- Jeff will provide updated information to Reed Glesne regarding Section 3.2 Tributary Barrier Confirmation and Removal Planning.
- Catherine Willard will provide additional information regarding the current status of tributaries that she observed this year.
- Jeff will forward construction dates of Mitchell and Gold Creek to the LCFF.

3.3 Fish Stocking

It was noted that due to the absence of WDFW at this meeting, the LCFF was unable to address this section completely. Therefore, it will be necessary to contact WDFW to verify their fish stocking data, what work was done in 2010, and what work is going to be done in 2011.

Action Item:

- Jeff will contact Jeff Korth and Corey Morrison, WDFW, regarding the status of 2010 work and fish stocking conducted, proposed 2011 work and fish stocking, and status of the WDFW Lake Chelan Fishery Management Plan.

3.4 Monitoring and Evaluation Program

3.4.1 Fall Index Stream Kokanee Spawning Surveys

Jeff reported that Chelan PUD conducted 2010 kokanee spawning ground surveys as stated in the 2010 plan. In addition, Jeff proposed to the LCFF a revised 2011 kokanee survey schedule, every other week at the tails of the spawning period and weekly during the peak, due to increasing workload for Chelan PUD staff.

Action Item:

- Jeff will draft a updated kokanee spawning survey schedule regarding Section 3.4.1

Misc Action Item:

- Due dates regarding 2011 Work Plan:
 - November 19, 2010: Reed will forward first DRAFT to Jeff, who will distribute the DRAFT to the LCFF.
 - December 10, 2010: LCFF comments/edits due to Reed.
 - December 24, 2010: Reed will provide Final DRAFT to Jeff, who will distribute to the LCFF.
 - January 10, 2011: Final Work Plan due to Chelan PUD.

WDFW

Sokolowski, Rosana

Subject: FW: Lake Chelan fish stocking in 2010 and 2011
Attachments: 2010 Lake Chelan Forum.xls

From: Morrison, Cory L (DFW) [mailto:Cory.Morrison@dfw.wa.gov]
Sent: Wednesday, January 12, 2011 1:25 PM
To: Osborn, Jeff
Subject: RE: Lake Chelan fish stocking in 2010 and 2011

Jeff, here is what I have for 2010 and projected for 2011. Also Kokanee marking will be the same as last year \$5,000 for marking and \$1135 for indirect \$6,135 total. If you need anything else, hollar! Cory

From: Osborn, Jeff [mailto:Jeff.Osborn@chelanpud.org]
Sent: Wed 1/5/2011 12:12 PM
To: Morrison, Cory L (DFW)
Cc: Truscott, Keith; Smith, Michelle
Subject: Lake Chelan fish stocking in 2010 and 2011

Corey: Below is the stocking table that was included in the Lake Chelan Fishery Forum 2010 Annual Work Plan. I have two favors to ask, since neither Art Viola or Tony Eldred are currently participating in the LCFF and preparation of the 2011 LCFF Annual Work Plan:

1. Will you please confirm the number of fish actually stocked in 2010, approximate dates, and locations to included in the background section of the 2011 work plan; and
2. Prepare a copy of this table for the planned stocking in 2011 for inclusion in the 2011 work plan.

2010 Fish Stocking Plan

Location	Species	Stock	Number	No. Fish/lb	Stocking date
Lake Chelan Tributaries					
Four Mile Creek	Cutthroat	Twin LK	10,000	Eyed eggs	June
Cascade Creek	Cutthroat	Twin LK	5,000	Fry	June or July
Bear Creek	Cutthroat	Twin LK	3,000	Fry	June or July
Big Creek	Cutthroat	Twin LK	2,000	Fry	June or July
Lake Chelan	Cutthroat	Twin LK	50,000	15	March
		ad clipped	(80%)		
	Kokanee	Lake Chelan	80,000	80	Mid May
	Triploid Rainbows	Spokane	50,000	3	August-September
Mill Creek	Cutthroat	Twin LK	3,000	Fry	June or July
	Triploid Chinook ¹	summer	50,000	Fry	March

1

1 – The triploid Chinook program is not funded by Chelan PUD

As you recall, Chelan PUD is on the hook ('scuz the pun) through the Lake Chelan license for providing 30,000 pounds of catchable-sized salmonids (we agreed at our summer meeting that it would be primarily triploid RBT and whatever WSCT you can produce, primarily fry for the tributaries) and 5,000 pounds of salmonid fingerlings (currently kokanee), so those are the areas in which we are primarily interested, though Art has included the triploid Chinook numbers in past years, which is fine do to the footnote.

Your assistance is appreciated greatly! Please feel free to give me a ring if you have any questions.

Thank you very much.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

Sokolowski, Rosana

Subject: WDFW Planning Meeting re Lake Chelan MFA Fishery and Wildlife Measures
Location: Conf. Rm. 1st Fl Large (12-16)

Start: Tue 5/24/2011 10:30 AM
End: Tue 5/24/2011 12:00 PM

Recurrence: (none)

Meeting Status: Meeting organizer

Organizer: Sokolowski, Rosana
Required Attendees: Korth, Jeffrey (DFW); Pope, Von; Osborn, Jeff
Resources: Conf. Rm. 1st Fl Large (12-16)

Good morning, Jeff

According to the WDFW agreement, we are required to hold an annual meeting to discuss WDFW 2011 budgets and 2012 proposed work. Also, I'd like to get your signature to release payment for the PUD's kokanee survey work, discuss remaining invoices to date and obtain WDFW contact information regarding the Rocky Reach resident fish work.

Updated worksheets and an agenda to follow shortly. Please let me know if this is a good time and thank you!

Rosana Sokolowski
Licensing & Compliance Coordinator
(509) 661-4175

DRAFT MEETING AGENDA

Attendees: Jeff Korth (WDFW)
Patrick Verhey (WDFW)
Von Pope (PUD)
Jeff Osborn (PUD)
Rosana Sokolowski (PUD)

PURPOSE

To develop 2012 Annual Planning Report and determine 2011 remaining budgets (View MFA table and worksheets updated May 18, 2011 via the secured website.)

TOPICS FOR DISCUSSION

10:30 – 11:00 **Wildlife Measures (Von Pope)**

- LC09a1 Conservation Easement
- LC09a2 Conservation Fees
- LC09a3 Habitat Fund
- LC09c2C Riparian Habitat

11:00 – 12:00 **Fishery Measures (Jeff Osborn)**

- LC03 Woody Debris

LC06b1 Fish & Monitoring

- Task 2, Item 1: Kokanee Creel
- Task 5, Item 2: Primary Tributary

LC06b2 Fish & Monitoring Match

- Task 2, item 1: Kokanee Creel
- Task 5, Item 2: Primary Tributary
- Task 8: Kokanee Fin Clip M&E

Here's the information to the site:

Link: <http://www.chelanpud.org/funding-documents-lc-list.html>

Username: [REDACTED]

Password: [REDACTED]

NPS

Sokolowski, Rosana

Subject: FW: Proposed LCFF Annual Work Plan Budget table for 2012
Attachments: LCFF 2011 draft final Work Plan master_RGcomments.doc

-----Original Message-----

From: Reed_Glesne@nps.gov [mailto:Reed_Glesne@nps.gov]
Sent: Wednesday, May 04, 2011 8:52 AM
To: Osborn, Jeff
Cc: Hugh_Anthony@nps.gov
Subject: RE: Proposed LCFF Annual Work Plan Budget table for 2012

Hi Jeff - I made just a few small comments in the sidebar of the document otherwise it looks good to me.

(See attached file: LCFF 2011 draft final Work Plan master_RGcomments.doc)

Sokolowski, Rosana

Subject: FW: LCFF plan edits

From: Osborn, Jeff
Sent: Thursday, May 05, 2011 5:06 PM
To: 'Hugh_Anthony@nps.gov'
Cc: reed_glesne@nps.gov
Subject: RE: LCFF plan edits

Hugh: I was reviewing the draft Lake Chelan Fishery Forum 2011 Annual Work Plan one more time today and saw in section 3.3.5 the size ranges of fish to be recorded were (6-12in, > 12-15in, and >15in). Should the size ranges in this section be consistent with the edit you provided for section 2.2.4 (<6in, 6-12in, 12-18in, and >18in)?

Please let me know at your convenience. Thanks much.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

From: Hugh_Anthony@nps.gov [mailto:Hugh_Anthony@nps.gov]
Sent: Wednesday, May 04, 2011 11:48 AM
To: Osborn, Jeff
Cc: reed_glesne@nps.gov
Subject: LCFF plan edits

Jeff,
I was looking over the LCFF Plan and noticed a few errors:

section 2.2.1 - Tables 2 & 4 "length of fish" is listed in mm, I believe this should be cm.

section 2.2.3 - First paragraph has survey dates ranging from May 1 to June 30, the final paragraph of this section has survey dates of mid April - June.
April 15 - June 30 would be the correct range of dates for this survey.

section 2.2.4 - Final paragraph has fish size classes of 6-12, 12-15 and >15". We intend to use the following size classes in our snorkel surveys: <6", 6-12", 12-18", >18".

We completed our first snorkel survey in the mainstem stehekin pools last week and saw 3 WCT approx. 15" in length so they are beginning to show up in the lower river.

Thanks,
Hugh Anthony
Aquatic Ecologist

North Cascades National Park
(360) 854-7324 work
(360) 333- 8532 cell

Sokolowski, Rosana

Subject: FW: LCFF plan edits

From: Osborn, Jeff
Sent: Monday, May 09, 2011 12:28 PM
To: 'Hugh_Anthony@nps.gov'
Cc: reed_glesne@nps.gov
Subject: RE: LCFF plan edits

Hugh: Apologies, but one more, hopefully, quick question: A citation is included in the text in Section 2.2.3, Anthony and Glesne 2010, that is not included in the Reference section of the plan (obviously because it is a new document). Will you please send me the citation so that I can add it to the reference section?

Thanks much.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

From: Hugh_Anthony@nps.gov [mailto:Hugh_Anthony@nps.gov]
Sent: Monday, May 09, 2011 7:30 AM
To: Osborn, Jeff
Cc: reed_glesne@nps.gov
Subject: RE: LCFF plan edits

Jeff - we should use the <6,6- 12, 12-18 >18 size classes in section 3.3.5 as well. Thanks for catching that.

Hugh Anthony
Aquatic Ecologist
North Cascades National Park
(360) 854-7324 work
(360) 333- 8532 cell

Sokolowski, Rosana

Subject: FW: LCFF plan edits

From: Hugh_Anthony@nps.gov [mailto:Hugh_Anthony@nps.gov]

Sent: Monday, May 09, 2011 1:49 PM

To: Osborn, Jeff

Subject: RE: LCFF plan edits

Anthony, H., and R.S. Glesne. 2010. Lower Stehekin River cutthroat and rainbow trout spawning surveys, 2009. Natural Resource Data Series NPS/NOCA/NRDS—2010/111. National Park Service, Fort Collins, Colorado.

glad to help!

Hugh Anthony
Aquatic Ecologist
North Cascades National Park
(360) 854-7324 work
(360) 333- 8532 cell

USDA FOREST SERVICE

Sokolowski, Rosana

Subject: FW: Chelan River Project and Chelan River Fishery Forum meeting
Attachments: 2011 DRAFT LCFF Work Plan.docx

From: Catherine Willard [mailto:cwillard@fs.fed.us]
Sent: Friday, April 15, 2011 6:46 AM
To: Osborn, Jeff
Subject: RE: Chelan River Project and Chelan River Fishery Forum meeting

Hi Jeff,
Attached is the LFF 2011 Workplan. I also wanted to let you know that I am waiting to receive my coupler from Onset (it was not working, so I sent it in for repairs) that allows me to download my temperature data from the thermographs I had in the creeks last year. Once I get the temperature data, I will send you my 2010 results report. Have a great weekend!

Catherine Willard
Fisheries Biologist
Entiat and Chelan Ranger Districts
Okanogan Wenatchee National Forest

Entiat Ranger District
P.O. Box 476
2108 Entiat Way
Entiat, WA 98822

509-784-1511 Ext. 520 (phone)
509-699-8189 (cell)
509-784-1150 (fax)

"Osborn, Jeff" <Jeff.Osborn@chelanpud.org>

To 'Catherine Willard' <cwillard@fs.fed.us>

cc

04/12/2011 03:21 PM

Subject RE: Chelan River Project and Chelan River Fishery Forum meeting

Catherine: Very nice that you got something for a budget... finally. I think using the NPS version for your edits would be great. I will incorporate your edits and, hopefully, someday, the WDFW work into a final and distribute to the LCFF.

Thank you for continuing to plug along.

P.S. I was up at Mitchell and Gold creeks today and they look fantastic! Make sure you stop by and check them out for yourself if you have the time.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231

Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

From: Catherine Willard [<mailto:cwillard@fs.fed.us>]
Sent: Tuesday, April 12, 2011 3:22 PM
To: Osborn, Jeff
Subject: RE: Chelan River Project and Chelan River Fishery Forum meeting

Hi Jeff,
We did just get a tentative budget and based on the tentative budget, I am planning to do monitoring/evaluation work (starting next week on Wednesday). I just got off the phone with scheduling the boat. Should I update the version of the work plan that the NPS had made edits too, or do you have a newer version? I will have that done by the end of the week.

Sorry for the delay!
Catherine Willard
Fisheries Biologist
Entiat and Chelan Ranger Districts
Okanogan Wenatchee National Forest

Entiat Ranger District
P.O. Box 476
2108 Entiat Way
Entiat, WA 98822

509-784-1511 Ext. 520 (phone)
509-699-8189 (cell)
509-784-1150 (fax)

"Osborn, Jeff" <Jeff.Osborn@chelanpud.org>

04/12/2011 01:35 PM

To 'Catherine Willard' <cwillard@fs.fed.us>
cc
Subject RE: Chelan River Project and Chelan River Fishery Forum meeting

Catherine: Thank you for your response and for checking with Phil. On another issue: how are you coming on the Forest Service activities for the Lake Chelan Fishery Forum 2011 Annual Work Plan? Still no budget news? Please let me know if there is anything I can do to help.

Thanks much.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County

327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

From: Catherine Willard [mailto:cwillard@fs.fed.us]
Sent: Tuesday, April 12, 2011 7:33 AM
To: Osborn, Jeff
Subject: Re: Chelan River Project and Chelan River Fishery Forum meeting

Hi Jeff,
I could attend Thursday, April 14th in the afternoon only or April 27. I will check with Phil to see what works for him.

Catherine Willard
Fisheries Biologist
Entiat and Chelan Ranger Districts
Okanogan Wenatchee National Forest

Entiat Ranger District
P.O. Box 476
2108 Entiat Way
Entiat, WA 98822

509-784-1511 Ext. 520 (phone)
509-699-8189 (cell)
509-784-1150 (fax)

"Osborn, Jeff"
<Jeff.Osborn@chelanpud.org>

04/05/2011 04:44 PM

To Jim Pacheco <jpac461@ecy.wa.gov>, Alex Martinez <ramartinez@fs.fed.us>, "Bitterman, Deborah" <Deborah.Bitterman@chelanpud.org>, Bob Goedde <bgoedde@cityofchelan.us>, Bob Rose <brose@yakama.com>, Brad Caldwell <brca461@ecy.wa.gov>, Bruce Heiner <heinebah@dfw.wa.gov>, Carl Merkle <carlmerkle@ctuir.com>, Catherine Willard <cwillard@fs.fed.us>, "Hays, Steve" <steve.hays@chelanpud.org>, Jeff Korth <Jeffrey.Korth@dfw.wa.gov>, Jerry Marco <jerry.marco@colvilletribes.com>, Nicky Markey <ndmarkey@gmail.com>, "Osborn, Jeff" <Jeff.Osborn@chelanpud.org>, Pat Irle <pir461@ecy.wa.gov>, Reed Glesne <Reed_Glesne@nps.gov>, Rich Domingue <Richard.Domingue@noaa.gov>, "Smith, Michelle" <michelle.smith@chelanpud.org>, Steve Lewis <Stephen_Lewis@fws.gov>, "Truscott, Keith" <keith.truscott@chelanpud.org>

cc

Subject Chelan River Project and Chelan River Fishery Forum meeting

Dear Chelan River Fishery Forum: Attached are documents associated with the November 18, 2010 Chelan River Project site visit, and discussions surrounding construction and performance of the Reach 4 habitat channel. The original plan was to finalize the November 18 site visit meeting notes edits and comments into one document. Due to differences of opinion, it was decided to keep the edits and comments on the meeting notes as stand-alone documents for the record. Hence you will see attached the original draft meeting notes, an email containing comments from Jim Pacheco, and comments from Pat Irlle. In response to Jim's and Pat's comments, Chelan PUD prepared the attached matrix. Additionally, Chelan PUD has prepared the attached whitepaper that outlines the PUD's view on the development, construction, and successful function of the Chelan River Project.

At the November 18 site visit, attending CRFF members requested to meet again in March to discuss issues of the Chelan River Project further, which will be a agenda item for the meeting. Another agenda item will be Monitoring and Evaluation activities proposed to be conducted by Chelan PUD. Please send me any additional agenda items that you would like to have included on the meeting agenda.

Proposed meeting dates are as follows:

Wednesday, April 13:

Thursday, April 14:

Friday, April 22:

Wednesday, April 27.

Please let me know the date that fits best with your schedules. I believe that meeting from 9:00 am to noon should be sufficient time to discuss our issues. Teleconferencing will be available. Additionally, if you wish a site visit to the Chelan River on the same date, then please let me know and we can make arrangements to tour the Project again. I will send out a formal meeting announcement including agenda confirming the date and time as soon as I receive input from you.

Thank you very much.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

[attachment "CRFF Chelan River site visit 111810 draft notes.docx" deleted by Catherine Willard/R6/USDAFS] [attachment "FW_ Chelan River Fishery Forum - November 18 2 .pdf" deleted by Catherine Willard/R6/USDAFS] [attachment "CRFF Chelan River site visit 111810 draft notes irlle coms.docx" deleted by Catherine Willard/R6/USDAFS] [attachment "111810 CRFF site visit notes response matrix.docx" deleted by Catherine Willard/R6/USDAFS] [attachment "Reach 4 Channel Success Whitepaper 112210.docx" deleted by Catherine Willard/R6/USDAFS]

Sokolowski, Rosana

Subject: FW: Lake Chelan Fishery Forum 2011 Annual Work Plan

From: Catherine Willard [mailto:cwillard@fs.fed.us]
Sent: Tuesday, May 10, 2011 5:43 AM
To: Osborn, Jeff
Subject: Re: Lake Chelan Fishery Forum 2011 Annual Work Plan

My apologies!

C. Willard. 2010. Lake Chelan Tributaries Spawning Monitoring and Evaluation-2010. Report prepared by USDA Forest Service, Chelan Ranger District for the Chelan PUD Lake Chelan Fishery Forum, December 2010. 10 pp.

Catherine Willard
Fisheries Biologist
Entiat and Chelan Ranger Districts
Okanogan Wenatchee National Forest

Entiat Ranger District
P.O. Box 476
2108 Entiat Way
Entiat, WA 98822

509-784-1511 Ext. 520 (phone)
509-699-8189 (cell)
509-784-1150 (fax)

"Osborn, Jeff" <Jeff.Osborn@chelanpud.org>

To: Catherine Willard <cwillard@fs.fed.us>

cc

05/09/2011 12:39 PM

Subject: Lake Chelan Fishery Forum 2011 Annual Work Plan

Catherine: Apologies for one last (hopefully!) request: A citation is included in Section 2.2.1, Willard 2011, that is not in the Literature Cited section of the Plan. Will you please send me the reference so that I can add it to the Literature Cited section?

Thank you very much.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

CHELAN PUD

Sokolowski, Rosana

Subject: FW: Lake Chelan Fishery Forum 2011 Annual Work Plan final
Attachments: LCFF 2011 Final Work Plan.docx

From: Osborn, Jeff
Sent: Friday, May 20, 2011 4:09 PM
To: Reed Glesne; Catherine Willard; Jeff Korth
Cc: Bitterman, Deborah; Smith, Michelle; Sokolowski, Rosana; Truscott, Keith
Subject: Lake Chelan Fishery Forum 2011 Annual Work Plan final

Attached is the final Lake Chelan Fishery Forum 2011 Annual Work Plan. We have meetings scheduled with you in the near future to ensure that budgets and accounting are accurate for the work planned for 2011. Chelan PUD has a FERC requirement to submit a fish stocking plan, which is included in the LCFF Annual Work Plans, as part of the Lake Chelan Fishery Plan by June 1 each year. We have been filing the entire LCFF Annual Work Plan to fulfill the fish stocking plan filing requirement since acceptance of the Lake Chelan Fishery Plan in 2007. Hence, the need to finalize this plan now to provide time for us to prepare our submittal to FERC.

Thank you for all your help in preparing the 2011 plan.

Jeff Osborn
License Program Coordinator
Natural Resources Programs
Public Utility District No. 1 of Chelan County
327 North Wenatchee Avenue
PO Box 1231
Wenatchee, WA 98807-1231
Phone: 509-661-4176
FAX: 509-661-8203
Email: jeff.osborn@chelanpud.org

Sokolowski, Rosana

From: Osborn, Jeff
Sent: Wednesday, June 01, 2011 10:33 AM
To: Alex Martinez; Bitterman, Deborah; Bob Goedde; Bruce Heiner; Carl Merkle; Catherine Willard; Hays, Steve; Janeen Tervo; Jeff Korth; Jerry Marco; Nicky Markey; Osborn, Jeff; Pat Irl; Patrick Verhey; Reed Glesne; Steve Lewis
Cc: Truscott, Keith; Smith, Michelle; Sokolowski, Rosana; Keller, Lance; Keesee, Barry
Subject: Lake Chelan Fishery Forum 2011 Annual Work Plan
Attachments: LCFF 2011 Final Work Plan (2).docx

Dear Lake Chelan Fishery Forum: Attached is the final Lake Chelan Fishery Forum 2011 Annual Work Plan. Chelan PUD has a FERC requirement to submit a fish stocking plan, which is included in the LCFF Annual Work Plans, as part of the Lake Chelan Fishery Plan by June 1 each year. We have been filing the entire LCFF Annual Work Plan to fulfill the fish stocking plan filing requirement since acceptance of the Lake Chelan Fishery Plan in 2007.

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**LAKE CHELAN FISHERY FORUM
2011 ANNUAL WORK PLAN**

**LICENSE ARTICLE 404
SETTLEMENT AGREEMENT CHAPTER 6**

FINAL

May 24, 2011

Developed by the
National Park Service, USDA Forest Service, and
Washington Department of Fish and Wildlife
in coordination with, and adopted by, Chelan PUD

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SECTION 1: INTRODUCTION

On November 6, 2007, Public Utility District No. 1 of Chelan County (Chelan PUD) filed the Lake Chelan Fishery Plan (LCFP) pursuant to Article 404 of the Federal Energy Regulatory Commission Order on Offer of Settlement and Issuing New License dated November 6, 2006 for the Lake Chelan Hydroelectric Project. This report satisfies Article 404 requirements for annual reporting of activities associated with the following:

1. Tributary Barrier Removal
2. Fish Stocking
3. Entrainment Sampling
4. Monitoring and Evaluation Program

The Federal Energy Regulatory Commission (FERC) approved the LCFP on December 4, 2007. A component of the Lake Chelan Settlement Agreement (SA) and Lake Chelan Fishery Plan is for the National Park Service (NPS), USDA Forest Service, and Washington Department of Fish and Wildlife (WDFW) to develop and adopt an annual work plan describing monitoring and evaluation measures in Lake Chelan to be implemented in the upcoming year and a report on activities completed the previous year.

It is a requirement of Chelan PUD's Lake Chelan license to make available \$20,000 each year, plus an additional \$20,000 in matching funds, to be used for implementing measures contained in the annual Lake Chelan Fish Monitoring and Evaluation Plan.

This annual work plan, developed in coordination with Chelan PUD and adopted by the NPS, USDA Forest Service, and WDFW, describes the methods and schedule used to demonstrate compliance with efforts to restore and enhance, where feasible, native fisheries in Lake Chelan and its tributaries, and to support the lake's recreational fishery.

The goals of the LCFP are to: 1) provide guidance for the management of the fishery resources in Lake Chelan; 2) protect native fish populations while maintaining a healthy recreational sport fishery in Lake Chelan; and 3) develop a monitoring and evaluation program to assess the efficacy of management actions.

The primary Lake Chelan Fishery Forum (LCFF) management objectives are to:

1. Emphasize restoration/enhancement of native species, where feasible;
2. Support the recreational sport fishery;
3. Manage the lake elevation to enhance tributary production and recreation;
4. Determine compatibility of management actions with potential future bull trout re-introduction;
5. Develop a monitoring and evaluation program that provides flexibility for future changes in both implementation and the monitoring and evaluation program;
6. Monitor and address entrainment of fish from Lake Chelan into the Project intake.

SECTION 2: POTENTIAL AND PAST MONITORING AND EVALUATION MEASURES

The following list of monitoring and evaluation measures includes potential future monitoring projects, monitoring projects that have been implemented and completed, and monitoring projects that have been implemented and are ongoing. Result summaries are reported briefly for past implemented projects. All projects are evaluated annually by the LCFF. Specific measures to be implemented in 2011 are described in Section 3.

2.1 Comprehensive Creel Surveys

Comprehensive creel surveys will be conducted every three years beginning in 2010. Surveys are designed to: 1) monitor the contribution (*naturally produced or hatchery released*) of West Slope cutthroat, rainbow trout, lake trout, kokanee, smallmouth bass and burbot to the sport fishery in the entire lake including that portion of the lake in the Lake Chelan National Recreation Area (LCNRA); and 2) determine what species of fish anglers prefer to catch.

Of particular importance is the collection of data to evaluate cutthroat replacement of rainbows in the sport harvest. Equally important is annual sampling of kokanee population abundance and age composition. This information is needed to guide development of a Lake Chelan Kokanee Management Plan. Sampling of kokanee size by age, population composition by age and catch-per-unit-effort (CPUE) of the current population during the spring fishing season should provide an estimate of the up-coming fall spawning escapement. All of the fish that become spawners in the fall are available for harvest each spring. This information will be used to predict the upcoming fall spawner abundance and determine whether eggs should be collected from spawning kokanee, taken to Chelan Hatchery, reared to fry size and released back into Lake Chelan to supplement natural kokanee production. In addition other information collected will assist with various fish management decisions.

Creel survey methods:

To ensure results from creel surveys on Lake Chelan are useful and relevant 2010 methods will be comparable to those used by Duke Engineering and Services (DES 2000a), Hagen 1997, and Brown 1984. The survey will conduct periodic effort counts, together with roving on-lake angler interviews every other week beginning in April and continue until mid October. Both effort counts and angler interviews will be on a stratified random basis. Strata should include weekdays, weekends; A.M. (0700 –1400 hours) and P.M. (1400 – 2100 hours) time periods, upper-lake (up-lake from Safety Harbor) and lower-lake (down-lake from Safety Harbor). At least two randomly chosen weekdays and one non-random weekend day, alternating between Saturday and Sunday, will be sampled every other week. Effort surveys will count and record the date and time of the survey and the number of boats observed (independently for the upper and lower portions of the lake). Angler interviews should be designed to collect information on angler effort (hours fished), fish caught and kept (or released) by species, fish length,

weight, scales samples (otoliths from burbot) for age analysis; all fin clips or other identifying marks should be recorded. Stomach samples can be obtained by offering to clean anglers' fish. Stomachs should be preserved in a 10% solution of formalin for future analysis. A questionnaire designed to learn angler species preference and satisfaction can be handed out during interviews with a return mail addressed envelope. Anglers will be asked to answer the questions when they have time and return the questionnaire by mail.

2.2 Westslope Cutthroat Trout

The current ongoing and planned future fish management goal for Lake Chelan is to beneficially alter the abundance and composition of fish species in the lake. Multiple methods are in progress or will be used in the future, such as altered fishing regulations, a change in stocking practices, and removal of lake tributary alluvial barriers to spring spawning fish to accomplish this goal (LCFP 2007). The monitoring and evaluation efforts listed below are needed to determine the success of these fish enhancement efforts and to signal the possible need of adaptive changes.

The goal for Westslope cutthroat trout (WSCT) is to increase, significantly, the abundance of WSCT in lake tributaries and the lake itself, for these fish to eventually replace themselves naturally, and for fish to contribute to the sport fishery. To reach this goal the following objectives must be met:

- 1) WSCT hatched from eyed-egg or fry stocking in lake tributaries must survive to maturity, spawn and contribute to increased natural production.
- 2) A sufficient number of the catchable size WSCT must escape harvest and recruit to the spawning run in order to substantially increase natural production.
- 3) The catchable size WSCT must eventually replace the catchable size rainbow trout (RBT) in the sport fishery.
- 4) A majority of anglers fishing Lake Chelan need to accept the change in species.

To determine the results of the creel survey and spring spawning surveys a database must be constructed. Data will be analyzed and evaluated to determine if our efforts are meeting the above goal and objectives.

2.2.1 Lake Chelan Tributaries Spawning Monitoring and Evaluation, USFS

Tributary Westslope cutthroat trout and rainbow trout spawning ground surveys will be conducted in some of the following tributaries: Bear, Big, Cascade, Four-mile, Lightning, Little Big, Riddle, Twenty-five Mile, First, Mitchell, Fish, Grade, Gold, Prince, Safety Harbor, Pyramid, Graham Harbor, Coyote, Castle, Deep Harbor and Lone Fir creeks. Powers and Tanner (2008) strongly recommended evaluation of the current status of Lake Chelan cutthroat trout spawning populations prior to treatment of fish passage barriers in tributary streams.

During the spawning season (April-June) Forest Service fish biologists will perform spawning ground surveys in the adfluvial zones of selected tributaries according to the methodology of the Lake Chelan Comprehensive Management Plan (Viola and Foster 2002). Survey frequency is expected to be one survey per stream per week. Sexual maturation, the onset of spawning, and embryo development are significantly regulated by the “thermal experience” of the fish population of interest; therefore, water temperature data loggers will be deployed in survey streams starting with the first (pre-spawning) survey and remain in place until late-September. Data loggers will record water temperature every 30 minutes.

Forest Service surveyors will conduct snorkel surveys in each stream in the fall to search for young-of-the-year. Snorkelers will survey, approximately 150-meter adfluvial zone segments that contain representative habitat units (pools, tailouts, and riffles). Surveyors may attempt to capture several fish per stream by hook-and-line for sample-in-hand confirmation of species identifications by snorkelers.

2009 and 2010 Lake Chelan Tributaries Spawning Monitoring and Evaluation Results

Results from the 2009 Lake Chelan tributary trout spawning surveys and snorkel surveys are summarized in Tables 1 through 4. Additional summary information can be found in Lake Chelan Cutthroat Trout Spawning Ground Surveys 2009 (Johnson and Archibald 2009) and 2010 Lake Chelan Tributaries Spawning Monitoring and Evaluation (Willard 2010).

Table 1. Cutthroat/Rainbow Trout Redds Observed in four North Shore Lake Chelan Tributaries, 2009.

Tributary	Survey Dates							
	4/15/09	4/22/09	4/29/09	5/6/09	5/13/09	5/20/09	5/27/09	6/3/09
Mitchell Creek	0	0	0	0	0	0	No Survey	0
Gold Creek	0	0	0	0	0	0	No Survey	0
Grade Creek	0	0	0	0	0	0	No Survey	0
Safety Harbor Creek	0	0	0	0	0	0	No Survey	0
Lake Chelan Level (ft. msl)	1086	1086.2	1087	1087.8	1088.5	1089	1091.8	1094.8

Table 2. Snorkel Survey Results for four North Shore Lake Chelan Tributaries, 2009.

Tributary	Survey Dates	Lake Chelan level (ft. msl)	Survey Reach Length (m)	Fish Species	Length of Fish (cm)			
					<3	3-10	10-20	20-30
Gold Creek	6/25/2009	1099	150	RBT	0	11	9	1
				WSCT	0	0	3	0
Grade Creek	7/30/2009	1099.9	220	RBT	4	35	39	10
Safety Harbor Creek	7/30/2009		50	RBT	5	35	19	4
				WSCT	0	0	3	1

RBT=rainbow trout WSCT=Westslope cutthroat trout

Table 3. Cutthroat/Rainbow Trout Redds Observed in four North Shore Lake Chelan Tributaries, 2010.

Tributary	Survey Dates							Total Redds
	4/13/10	4/20/10	4/27/10	5/5/10	5/12/10	5/19/10	5/26/10	
Mitchell Creek	0	0	0	1	0	NS	0	1
Gold Creek	0	0	0	0	0	NS	0	0
Fish Creek	0	1	1	0	0	0	0	2
Prince Creek	0	0	0	0	0	0	0	0
Lake Chelan Level (ft. msl)	1089.5	1090.0	1090.5	1091.0	1092.0	1092.0	1094.0	

^aNS=No survey

Table 4. Snorkel Survey Results for four North Shore Lake Chelan Tributaries, 2010.

Tributary	Survey Dates	Lake Chelan level (ft. msl)	Survey Reach Length (m)	Fish ^a Species	Length of Fish (cm)			
					<3	3-10	10-20	>20
Mitchell Creek	9/15/2010	1,098	100	RBT	0	0	2	0
				WSCT	0	0	3	0
				KOK	0	0	0	1
Gold Creek	9/15/2010	1,098	100	RBT	0	3	1	0
				WSCT	0	3	3	0
				KOK	0	0	0	5
Fish Creek	09/29/2010	1,097	150	RBT	0	37	24	7
				WSCT	0	48	31	11
				KOK	0	0	0	36
Prince Creek	09/29/2010	1,097	100	RBT	0	0	8	5
				WSCT	0	20	5	5
				KOK	0	0	0	23

^aRBT=rainbow trout; WSCT=Westslope cutthroat trout; KOK=kokanee

2.2.2 Lake Chelan Tributary Estimates of Juvenile Cutthroat and Rainbow Trout Abundance, WDFW

Beginning in 2010 and continuing into 2011, and every third and fourth year thereafter, WDFW will sample First, Mitchell, Fish, Grade, Gold, Prince, and Safety Harbor Creeks to obtain information on adfluvial WSCT and RBT population abundance, age class composition and other biological characteristics. If time and manpower allow all or some of the following additional seven creeks may also be sampled in 2010: Twenty-five Mile, Pyramid, Graham Harbor, Coyote, Castle, Deep Harbor and Lone Fir creeks. If not, these creeks will be surveyed in 2011. This sequence of sampling effort will begin again in 2013 and continue into 2014.

Electrofishing techniques similar to those described in Brown (1984) and DES (2000a) will be used to sample tributary abundance of juvenile WSCT and RBT. Results from data gathered will be compared to those conducted by Brown (1984) and DES (2000a) to estimate population dynamics of WSCT since year 2000; the intent being to evaluate the effectiveness of recent management actions to increase WSCT abundance.

2.2.3. Stehekin River Tributary/Side-Channel Cutthroat and Rainbow Trout Spawner Surveys, NPS

The objective is to annually monitor trends in abundance of cutthroat and rainbow trout spawners (April 15- June 30) at 12 tributary and side-channel index reaches in the lower 8 miles of the Stehekin River. Results will be used to evaluate progress towards restoration of adfluvial/fluvial westslope cutthroat trout and management efforts directed at reduction of non-native rainbow trout in the lower Stehekin River.

During 2009, initial habitat surveys (Anthony and Glesne 2010) of all side-channels and tributaries of the lower 8 miles of the Stehekin River were conducted for the purpose of selecting cutthroat and rainbow trout spawner index reaches. Twelve index reaches, 10 to 20 channel widths long, were selected based on presence of suitable spawning gravels and flows. Other considerations included the feasibility of conducting snorkel surveys during the May – June period of high flows and potential stability of candidate index sites for long-term monitoring.

During 2009 and 2010, four rainbow and cutthroat trout spawning surveys were conducted between mid-April and late June (Anthony and Glesne 2010, Anthony 2011, in prep.). During 2009, fish were observed at 5 of the 12 index reaches. Cutthroat trout were not observed during any of the surveys. A total of 11 adult rainbow trout and one unidentified fish were observed during the four surveys. Thirteen redds were observed in the 4 index reaches and two of these had rainbow trout spawners holding over them. During 2010, a total of 9 fish were observed at 6 of the 12 index reaches and as in 2009 they were all rainbow trout. Nine unknown redds were also observed at one of the index reaches in 2010.

Index stream spawner surveys will be repeated during 2011. Four to five snorkel and/or visual observation spawner and redd surveys will be conducted at each of the index sites during April 15 through June 30.

2.2.4 Stehekin River Mainstem Cutthroat and Rainbow Trout Surveys, NPS

Despite the apparent lack of spawning cutthroat trout in Stehekin River tributary and side-channel index sites (Section 2.2.3.1), a number of large, 15"-18" cutthroat trout were viewed in the mainstem Stehekin River during the late fall and autumn 2010 kokanee surveys. Though not observed while spawning, these observations confirm the presence of large, potentially adfluvial cutthroat in the Stehekin River system.

To compliment information collected from the tributary/side-channel surveys additional mainstem Stehekin River exploratory spring and fall snorkel surveys will be conducted in 2011 to assess progress towards restoration of adfluvial/fluvial westslope cutthroat trout and management efforts directed at reduction of non-native rainbow trout.

Eight potential large pool survey locations have been identified in the lower 7km of the mainstem channel. Four to six of these sites will be selected for surveys based on the presence of suitable spawning substrate (10-70mm) and water velocity in the pools and associated tail-outs. Two 3-pass snorkel surveys will be conducted at each of the selected

sites during the spring spawning season. One 3-pass snorkel survey will be conducted at each of the selected sites during late September. Numbers of rainbow and cutthroat trout spawners and holding fish (< 6 in, 6-12in, >12-18in, and >18in) will be recorded. All observed redds will also be recorded. Results will be used to evaluate and refine methods for monitoring recovery of westslope cutthroat trout in the Stehekin River.

2.2.5 Stehekin River Tributary/Side-Channel Juvenile Cutthroat and Rainbow Trout Surveys, NPS

This is an exploratory survey (2011) designed to supplement information from the tributary and side-channel cutthroat and rainbow trout spawner surveys (Section 2.2.3). The 2009 and 2010 spawner surveys failed to confirm the presence of cutthroat in any of the spawner survey index reaches. Results from this study would be used to confirm the presence or absence of cutthroat trout in our spawner index reaches and provide baseline abundance information for future evaluations of cutthroat recovery in the lower Stehekin.

Relative abundance (electrofishing CPE) and distribution of juvenile cutthroat and rainbow trout would be documented in a representative sample of four to five of the spawner survey index reaches. The presence of hybrid cutthroat x rainbow trout in the lower Stehekin makes species verification difficult particularly with fry and juvenile fish. To overcome this problem non-lethal tissue samples will be collected for genetic analyses to verify species information, separating cutthroat from rainbow trout and cutthroat x rainbow hybrids following methods in Ostberg and Rodriguez (2006). A single pooled sample of tissue from 50 fish will be evaluated for this analysis.

Results of this study will be used to refine future monitoring efforts focused on evaluating progress towards recovery of cutthroat trout in the Stehekin River.

2.2.6 Monitor Frequency of Non-Native Rainbow Genetic Introgression in Native Cutthroat Trout in the Stehekin River, NPS

During 2010, fish tissue samples were collected at five Stehekin River locations distributed throughout the drainage to monitor the level and frequency of hybridization between non-native rainbow trout and native cutthroat trout. Currently, laboratory analyses are being conducted by Carl Ostberg (USGS-WFRC, Seattle) and results will be reported in 2011. Results will be compared with baseline data from fish collected in 2001-2003 (Ostberg and Rodriguez 2006) to evaluate cutthroat trout status and progress towards cutthroat trout restoration in the watershed.

Non lethal tissue samples were collected from 50 fish at each of five sampling locations. Sites were selected to represent the gradient of introgression ranging from pure cutthroat trout to a mixture of pure fish, F1 and post-F1 hybrids to mostly pure rainbow trout as previously documented in the Ostberg and Rodriguez (2006) publication. Sampling locations corresponded to reach numbers designated in Ostberg and Rodriguez (2006) publication (below and in Figure 1).

- Location 1 (upper Stehekin; SR6 and SR7- pure westslope cutthroat)
- Location 2 (Stehekin River above Bridge Creek confluence; SR3 and SR4 - primarily pure cutthroat and post-F1 hybrids)
- Location 3 (Bridge Creek between McAlester and South Fork tribs; BR5 - primarily pure cutthroat with some post-F1 hybrids)
- Location 4 (Stehekin River below Bridge Creek confluence; SR1 and SR2, and Lower Bridge Creek; BR1- primarily post-F1 hybrids with a mixture of pure rainbow, pure cutthroat, and F1 hybrids)
- Location 5 (lower Stehekin River below confluence of Agnes Creek; previously unsampled- expected to be primarily rainbow trout).

This study was previously proposed to be repeated on a five to ten year interval. The need for future evaluations of cutthroat trout introgression in the Stehekin River will be addressed following completion of the 2010 study report.

Genetic Introgression in Cutthroat Trout (Ostberg and Rodriguez 2006)

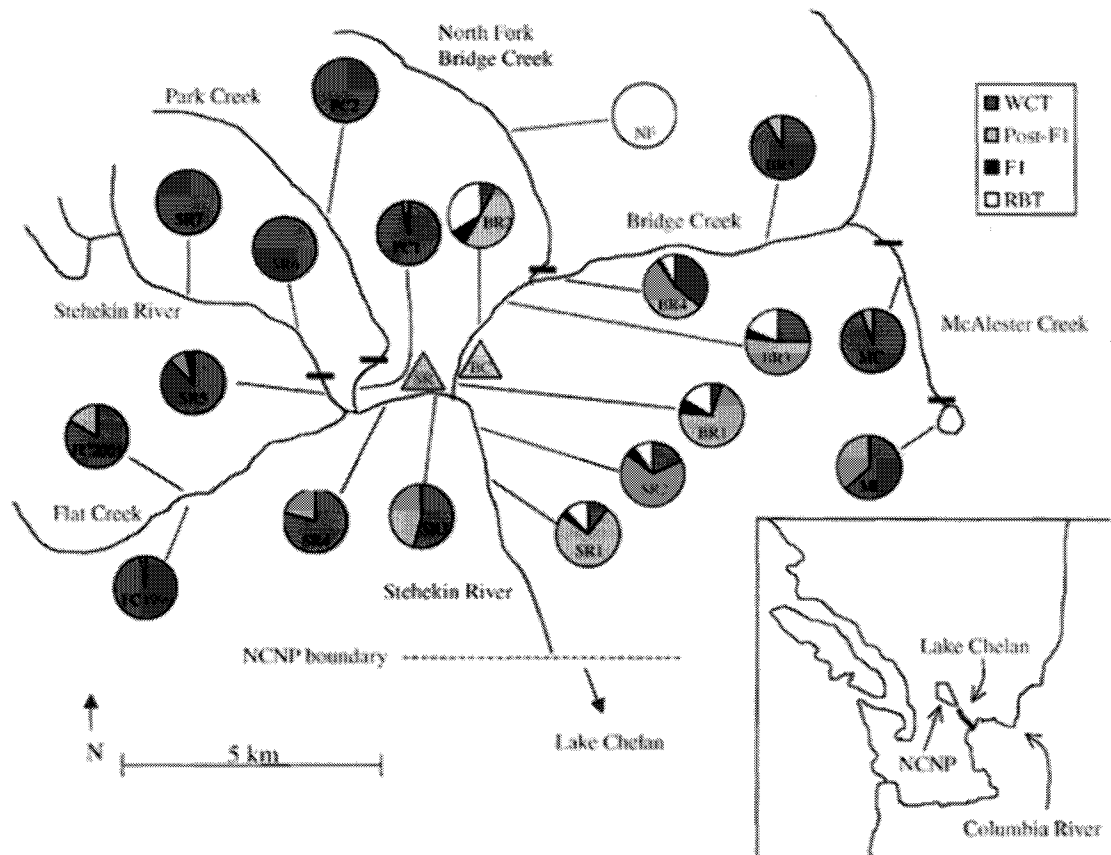


Figure 1. Genetic introgression in cutthroat trout collected between 2001 and 2003 in the Stehekin River Basin.

2.3 Kokanee

Kokanee are the most sought after fish in Lake Chelan (Brown 1984; DES 2000a). Maintaining a popular kokanee sport fishery in Lake Chelan is a high priority. To maintain this, kokanee should be managed to maintain their abundance at a mean size acceptable to anglers, but at a level of abundance that does not substantially hinder efforts to restore native species.

Goals and objectives for Lake Chelan are to: 1) produce consistently good fishing; and 2) maintain an abundance of kokanee at a level that does not substantially hinder our efforts to restore native species.

2.3.1 Fall Index Stream Kokanee Spawning Surveys, CPUD

Chelan PUD has conducted annual Lake Chelan spawning ground surveys for kokanee and land-locked Chinook salmon since 1984. The purpose of these surveys is to document the annual trends of kokanee spawning populations within the Lake Chelan drainage (Stone and Fielder 2004). Two tributaries of the Stehekin River, Company Creek and Blackberry Creek, have been used as index reaches since 1984 because a majority of kokanee production from the Stehekin originates from in these tributaries. Additional tributaries to Lake Chelan that have been included in the annual kokanee spawning ground surveys are: Mitchell, Gold, Grade, Safety Harbor, Prince, Fish, First, and Twenty-five Mile creeks.

Surveys have been conducted approximately twice monthly between August 31 and October 30. Crews conduct surveys by walking in or along the streams and counting all live kokanee. Tally counters are used to keep track of fish numbers. Large masses of kokanee are estimated in some pools located in Company and Blackberry creeks (Stone and Fielder 2004).

The LCFF has requested that Chelan PUD continue to conduct these annual kokanee spawning grounds surveys beginning in the fall of 2007. Chelan PUD will continue to conduct these surveys to maintain sampling method continuity and comparability in the long record of estimated kokanee escapement that has been established through the past license term.

2.3.2 Mainstem Stehekin River and Tributary/Side-Channel Kokanee Spawning Escapement Surveys, NPS

Kokanee spawning surveys conducted during the previous license focused on a set of important subjectively selected index reaches of tributaries to Lake Chelan and the Stehekin River (Fielder 2000; Stone and Fielder 2004). The continuity of this important long-term survey has been maintained in the new license period (Section 2.3.1). However, there is significant kokanee production emanating from the mainstem and side channel habitat of the Stehekin River that is not being assessed using current survey methods (DES 2000b). An expanded kokanee survey, including a probability sample of all potential kokanee spawning habitat in the mainstem, side-channels, and tributaries, was completed in 2010. The intent of the survey was to develop a better estimate of the

total escapement of kokanee spawners in the Stehekin River and to track changes in distribution of spawners in the watershed.

In the spring of 2010 North Cascades National Park Service (NOCA) personnel conducted habitat surveys on all side-channels/tributaries in the lower Stehekin River. These surveys were based on Forest Service Level 2 habitat surveys with additional criteria for defining suitable kokanee spawning habitat. A total of 9.60 km were deemed suitable for kokanee spawning based on substrate data and channel depths. Of this 9.60 km of suitable habitat, 3.40 km were randomly selected as kokanee spawning survey reaches. Additionally, the mainstem Stehekin River was partitioned into thirty-two 500m reaches. Of these 500m reaches, 8 were considered poor kokanee habitat as the river channel is deeply incised and substrate large cobbles and boulders. These reaches were identified in a 2007 NOCA large woody debris survey as "transport zones". Of the remaining 24 reaches, 12 were randomly selected for sampling. All randomly selected mainstem and side-channel/tributary reaches were sampled four times (two week intervals) between August 30th and October 15th.

Extrapolation of spawner survey counts to all suitable mainstem and all suitable side-channel/tributary habitat was determined using the Area Under the Curve Method (AUC: Beidler and Nickelson 1980). Tentative results show a total of 67,440 kokanee using the mainstem Stehekin channel and 131,481 kokanee using the side-channel/tributary habitat. Total kokanee spawner escapement was estimated at 198,921 fish. A detailed report will be completed by NPS-NOCA staff in 2011.

Replication of this survey is recommended at every three to five year intervals. Results can be used to calibrate annual index station escapement to total escapement and to evaluate changes in habitat and spawner distribution in the study area.

2.3.3 Kokanee Stocking Monitoring and Evaluation, WDFW

WDFW will clip adipose fins on all kokanee reared and released into Lake Chelan as part of the fish stocking program. Fin clipped kokanee will provide important information regarding the contribution of hatchery-reared kokanee to the sport fishery (especially their survival) as identified through creel surveys versus natural production. The cost of fin-clipping hatchery produced kokanee is estimated to be \$5,000 annually.

2.4 Burbot

The LCFF believes that monitoring burbot population dynamics should be an important component to the monitoring and evaluation program. However, methods for assessing the burbot population in Lake Chelan need to be developed. Developing these methods will be a future task for the LCFF.

2.5 Smallmouth and Largemouth Bass

The LCFF believes that monitoring smallmouth and largemouth bass population dynamics should be an important component to the monitoring and evaluation program. However, methods for assessing the bass population in Lake Chelan need to be developed. Developing these methods will be a future task for the LCFF.

2.6 Bull Trout

The LCFF believes that the monitoring of any future population and/or individual occurrences of bull trout in Lake Chelan should be an important component to the monitoring and evaluation program. Monitoring of this species at this time should include documentation of incidental occurrences during associated fish monitoring and evaluation program activities. Standard metric measurements, physical condition, and location of fish within Lake Chelan during these occurrences should be documented and provided to the LCFF for review.

2.7 Bioenergetics Food Web Model

Funding for the LCFF bioenergetics food web model was provided by Chelan PUD funding (\$115,000) and the NPS (\$235,000). The bioenergetics food web model report is complete and has been posted on the Lake Chelan Implementation website (http://www.chelanpud.org/departments/licensingCompliance/lc_implementation/ResourceDocuments/34039.pdf). The LCFF may choose to fund additional work related to the food web model in future years using funds dedicated to implementing the Monitoring and Evaluation program.

SECTION 3: MEASURES TO BE IMPLEMENTED IN 2011

The following addresses Tributary Barriers, Fish Stocking, and the Monitoring and Evaluation Program measures that will be implemented in 2011.

3.1 Tributary Barrier Confirmation and Removal Planning

Tributary barriers identified in the Tributary Barrier Analysis report (DES 2000b) will be reassessed for depth, velocity, and gradient and re-prioritized if necessary. Two methodologies that may be used are: 1) using the Forest Practices Board Emergency Rule and "Oregon Method" used in the 2000 report; or 2) developing a more simplistic method based on the principles of the 2000 methodology to use as a more rapid assessment tool. The USDA Forest Service supports the latter option.

As tributary barriers are documented as either remaining or eliminated, the LCFF will update the tributary barrier removal priority list included in the 2000 report. Once the tributary barrier removal priority list is updated, the LCFF will work with Chelan PUD to implement Lake Chelan Settlement Agreement License Article 6(c) for tributary barrier removal work, such as investigating barrier removal methods, stream channel rehabilitation design at tributary mouths, contractor selection to conduct work, etc. Actual on-the-ground tributary barrier removal efforts will commence in early 2011, depending upon runoff volume and associated lake elevation.

Tributary barrier removal efforts were scheduled originally to begin in 2009. However, the schedule was revised due to delay in selecting a design contractor; need by the design contractor to view tributary mouths in 2009 to observe barriers present and discuss with the consulting team and LCFF potential preliminary design features; time required to secure necessary permits; and time required to secure a construction contractor.

The LCFF conducted a boat tour of tributary mouths in March 2008, touring both the north and south shores from Twenty-five Mile Creek uplake to Fish Creek. During the tour, LCFF members took numerous photographs of the tributary mouths to initiate photo-documentation of existing tributary mouth conditions and barriers to upstream fish passage. Photographs were posted on the Chelan PUD Lake Chelan Implementation Website. After the conclusion of the tour, Forum members reached consensus that virtually all tributaries observed had barriers, either water depth, water velocity, or gradient, to upstream fish passage at the lake elevation of approximately 1083.0 feet that occurred during the site visit.

The LCFF met again on June 17, 2008 to review Statements of Qualifications (SOQs) submitted by potential tributary barrier removal design consultants, select a consultant, and proceed with implementing the Tributary Barrier Removal Project (TBRP). A design consultant, the Fairbanks Environmental Team, was selected by consensus of the LCFF.

The LCFF reviewed pertinent information regarding watershed conditions of tributaries to Lake Chelan, such as the USDA Forest Service Regional Assistance Teams (RATs) assessment report, USDA Forest Service Lake Chelan Basin fire map of areas burned since 1998, and tributary mouth photographs taken in March 2008. Based on this information, the priority tributaries selected by the LCFF at the June 17, 2008 meeting were Safety Harbor, Mitchell, Grade, and Gold creeks.

However, even with the selection of priority tributaries, the LCFF members discussed proceeding cautiously with tributary barrier removal efforts due to the following considerations:

1. Based on the data illustrated by the Lake Chelan basin fire map and recommendations from the RATs, significant watershed instability has been documented in most tributaries to Lake Chelan due to recent fires. The instability of the upper watersheds will likely result in high bedload movements for a number of years during high runoff events, which may thwart barrier removal and stream reconfiguration efforts until the watersheds have time to stabilize to a greater extent;
2. The RATs also recommended giving the new lake level operating regime more time to be in effect that may allow tributaries to carve out alluvial deposits on their own due to high flow events occurring when the lake level will lower than historical elevations during major high runoff events, particularly in the fall and winter; and
3. Allow the WDFW Westslope cutthroat trout restoration program additional time to increase tributary WSCT populations, thereby producing more spawning age adults that could contribute to natural reproduction in the tributaries.

Efforts to implement barrier removal in Lake Chelan tributaries in 2009 included the following:

1. A photographic reconnaissance of the main tributaries in February 2009. The new lake level operating regime for the Lake Chelan Project has been in effect since September 2007. The intent of the new regime was to draft the lake lower in the fall in order to allow winter freshets to carve out sediment at the mouths of tributaries to prevent formation of barriers (depth, velocity, gradient) to upstream adult fish passage, primarily Westslope cutthroat trout, in the spring for spawning. Changes in tributary mouths were noted, particularly at Fish, Prince, and Safety Harbor Creeks. Obvious barriers to upstream passage were documented in March 2008. These barriers appear to have been removed in Fish, Prince and Safety Harbor Creeks by freshets that occurred during the winter of 2008-2009. Other tributaries appear also to be "healing themselves," with better fish passage conditions documented in the February 2009 photographs. A storm event occurred the first week in January 2009 that raised the discharge from the Stehekin River significantly. It is expected that the tributaries to the lake followed

a similar pattern. This event, and preceding ones during winter 2008-2009, may be responsible for the changes noted in the 2009 photographs. These data are preliminary, but give an indication that the new lake level operating regime may be providing the desired benefits of preventing tributary mouth barrier formation and removing existing barriers to upstream adult fish passage.

2. As planned, a site visit was conducted on April 2, 2009 when the lake surface elevation was approximately 1,086 feet relative to mean sea level, near the annual low operating level and when the stream discharge was low. Attending were members of the Fisheries Forum with consultant team members Chris Fairbanks, fisheries biologist, Craig Cooper, fluvial geomorphologist, and Pat Powers, fisheries engineer. The objectives of the site visit were to make a qualitative determination of the extent and nature of upstream fish passage barriers at each of the four creeks and to explore alternatives for enhancing or creating upstream fish passage. The four tributaries included: Mitchell, Gold, Grade, and Safety Harbor creeks. Excerpts from field notes (complete field notes and photos can be viewed at www.chelanpud.org/lc-Resource-Documents-LCFF):

Mitchell Creek - The field team consensus was that upstream fish passage was impeded primarily by shallow water depth. A solution to improve upstream passage was to confine the stream flow to a narrower channel that would provide depth with some step-pools to allow resting stations. Large angular rocks would be the most appropriate materials that would be most resistant to movement by high stream flows or by campground guests. Large woody material would not be an appropriate material.

Gold Creek - The Gold Creek channel has been very stable since the 2000 field season. The creek has remained confined to a channel that extends from the full pool level through the alluvial fan to the lake surface. Large rocks along the right bank (looking downstream) keep the stream channel confined. The overall grade of the stream channel in the alluvial fan was 10% with a short cascade of 16.7%. The group consensus was that fish passage was impeded by grade and water velocity that could be improved with rock weirs. Rock weirs would create step pools which would reduce the overall grade and water velocity. The step pools would also provide resting stations for upstream migrating fish. Additional parameters that were discussed to reach consensus include: tributaries should be passable above lake elevation of 1,086 feet to ensure upstream passage for spring spawners; design criteria should target 8-10 inch cutthroat and rainbow trout.

Grade Creek - A challenging site. The overall grade of the stream channel in the alluvial fan was 19% with few step pools for resting stations for upstream migrating fish. The channel appears to be fairly similar to the 2000 field season (and 2008 photos). The team consensus was that fish passage was impeded by the steep slope and by high water velocity with few resting stations for upstream migrating fish. Several ideas to lengthen the stream channel were discussed. However, physical constraints of the site's geology and stream energy make

alterations of the stream channel unfeasible. Placement of prefabricated fishways was considered as a method to provide upstream passage. The fishways would be costly to construct and would need frequent monitoring and servicing to ensure that rock and woody material is not blocking fish passage. At a subsequent LCFF meeting, USFS Fish Biologist Phil Archibald recommended in 2009 that enhanced upstream passage in Grade Creek be assigned a very low priority for the previously noted reasons in addition to limited adfluvial habitat that could be made accessible (220 m) and the presence of only rainbow trout (no cutthroat) in the creek.

Safety Harbor Creek - The stream channel of Safety Harbor Creek has been greatly down-cut compared to the 1999 and 2000 field seasons and 2008 photos. The grade, water velocity, and water depth appear to be appropriate for upstream fish passage. The group consensus was that fish passage was unimpeded except for temporary obstacles presented by floating woody material that has accumulated near the full pool level. Group members removed several key pieces to allow natural processes to keep a section of the channel clear of debris and with adequate water. By the end of July 2009, most of the wood had been flushed from the mouth of the creek.

3. Initial designs for barrier removal were submitted to CPUD by the consultant team on 6/26/2009 and reviewed and discussed by the LCFF on 7/14/2009. The LCFF reached consensus on proceeding with modified designs for Mitchell and Gold Creeks. Final designs were submitted to CPUD on 8/20/2009 and agreed to by the LCFF.
4. Chelan PUD initiated acquisition of all required permits and contract bid package to conduct barrier removal and stream mouth restoration projects in Mitchell and Gold Creeks in 2011.

Efforts to implement barrier removal in Lake Chelan tributaries in 2010 included the following:

1. Permit packages for both Mitchell and Gold creeks were submitted by Chelan PUD to the U.S. Army Corps of Engineers (COE), approved by the COE, and received by Chelan PUD, allowing for proceeding with barrier removal and stream channel restoration activities in 2011.
2. A construction contractor (Rayfield Construction) was secured by Chelan PUD to conduct work at both Mitchell and Gold creeks.
3. Chelan PUD staff planned to have the Lake Chelan elevation in 2011 at or below 1086 feet (MSL) by no later than mid-February and remain below 1086 feet through March and, potentially, into early April in order to conduct construction activities in-the-dry.
4. Barrier removal and stream reconstruction activities were conducted in Mitchell and Gold creeks, simultaneously, beginning the week of February 7, 2011 and completed on February 24, 2011.

3.2 Fish Stocking

Article 6(d) and Section 4.6.3 of Chapter 6 of the Comprehensive Plan requires Chelan PUD to make available to the WDFW sufficient funding to rear annually the following resident fish at the Chelan Hatchery for stocking in Lake Chelan:

1. Approximately 5,000 pounds of salmonid fingerlings (for example: 500,000 fish at 100 fish/lb., presently kokanee).
2. Approximately 33,000 pounds of catchable-sized salmonids (for example: approximately 100,000 fish at 3 fish/lb., presently Westslope cutthroat trout (WSCT) and triploid rainbow trout (RBT)).

In 2009, WDFW released approximately 50,000 WSCT (at a size of 15 fish/pound) at Lakeside and Mill Bay in March, and approximately 70,000 triploid RBT (at a size of 3 fish/pound) at Lakeside in August and September (Art Viola, WDFW, pers. com.). Approximately 227,000 kokanee fingerlings, taken from broodstock collected in fall 2006 from the Stehekin River, were released into Lake Chelan near the Yacht Club in May (at a size of 75 fish/lb.). Additionally, approximately 175,000 WSCT fry were released into Twenty-five Mile, Mitchell, Prince, Safety Harbor, Fish, Grade, and First creeks (at a size of 600 fish/lb.) in June and July.

The stocking plan from WDFW for 2010 is shown in Table 5 (Art Viola, WDFW, pers. com.).

Table 5. 2010 Fish Stocking Plan

Location	Species	Stock	Number	No. Fish/lb	Stocking date
Lake Chelan Tributaries					
Four Mile Creek	Cutthroat	Twin LK	10,000	Eyed eggs	June
Cascade Creek	Cutthroat	Twin LK	5,000	Fry	June or July
Bear Creek	Cutthroat	Twin LK	3,000	Fry	June or July
Big Creek	Cutthroat	Twin LK	2,000	Fry	June or July
Lake Chelan	Cutthroat	Twin LK	50,000	15	March
		ad clipped	(80%)		
	Kokanee	Lake Chelan	80,000	80	Mid May
	Triploid Rainbows	Spokane	50,000	3	August-September
Mill Creek	Cutthroat	Twin LK	3,000	Fry	June or July
	Triploid Chinook ¹	summer	50,000	Fry	March

1 – The triploid Chinook program is not funded by Chelan PUD

The actual number of fish released by WDFW into Lake Chelan in 2010 is presented in Table 6 (Corey Morrison, WDFW, pers. com.).

Table 6. 2010 Actual Fish Stocking

Location	Species	Stock	Number	No. Fish/lb	Stocking date
Lake Chelan Tributaries					
Four Mile Creek	Cutthroat	Twin LK			
Cascade Creek	Cutthroat	Twin LK	5,000	Fry	June or July
Bear Creek	Cutthroat	Twin LK	3,000	Fry	June or July
Big Creek	Cutthroat	Twin LK	2,000	Fry	June or July
Lake Chelan	Cutthroat	Twin LK	52,180	5.6	June-July
		ad clipped	(80%)		
	Kokanee	Lake Chelan	89,119	64	May 5 th - 6 th
	Triploid Rainbows	Spokane	555	0.36	May - September
	Triploid Rainbows	Spokane	19,545	3	August-September
Mill Creek	Cutthroat	Twin LK	3,000	Fry	June or July
	Triploid Chinook ¹	summer	42,000	100	March

1 – The triploid Chinook program is not funded by Chelan PUD

The stocking plan from WDFW for 2011 is shown in Table 7 below (Corey Morrison, WDFW, pers. com.).

Table 7. 2011 Fish Stocking Plan

Location	Species	Stock	Number	No. Fish/lb	Stocking date
Lake Chelan Tributaries					
Four Mile Creek	Cutthroat	Twin LK	10,000	Eyed eggs	June
Cascade Creek	Cutthroat	Twin LK	5,000	Fry	June or July
Bear Creek	Cutthroat	Twin LK	3,000	Fry	June or July
Big Creek	Cutthroat	Twin LK	2,000	Fry	June or July
Lake Chelan	Cutthroat	Twin LK	100,000	15	March
		ad clipped	(80%)		
	Kokanee	Lake Chelan	80,000	80	Mid-May
	Triploid Rainbows	Spokane	1,000	0.4	May - September
	Triploid Rainbows	Spokane	50,000	2.5	August-September
Mill Creek	Cutthroat	Twin LK	3,000	Fry	June or July
	Triploid Chinook ¹	summer	50,000	100	March

1 – The triploid Chinook program is not funded by Chelan PUD

3.3 Monitoring and Evaluation Program

3.3.1 Comprehensive Creel Surveys, WDFW

Comprehensive creel surveys will be conducted beginning in 2010. Surveys are designed to: 1) monitor the contribution (*naturally produced or hatchery released*) of Westslope cutthroat, rainbow trout, lake trout, kokanee, smallmouth bass and burbot to the sport fishery in the entire lake including that portion of the lake in the Lake Chelan National Recreation Area (LCNRA); and 2) determine what species of fish anglers prefer to catch.

Estimated Budget and Schedule:

Year	Task	Total \$	Requested \$	WDFW Matching \$
2011	Conduct a comprehensive Creel survey every other week April 1 – October 15 Two Scientific technicians for 3 days/week x 14 weeks = 84 man days.	\$13,608	\$6,804	\$6,804
	Fish age determination from scale and/or otoliths samples	\$500	\$250	\$250
	Boat and Vehicle fuel costs	\$3,500	\$3,500	-0-
	Supplies and equipment	\$300	\$300	-0-
	Data Mgt. and Reporting (1-Biologist for 3 man-days)	\$1,250	\$625	\$625
	Travel (Lodging when needed and per diem)	\$1,103	\$1,103	-0-
2010 Estimated Totals:		\$20,261	\$12,582	\$7,679

3.3.2 2011 Lake Chelan Tributaries Spawning Monitoring and Evaluation, USFS

During the spawning season (April-June) Forest Service fish biologists will perform spawning ground surveys in the adfluvial zones of Prince, Fish, and Safety Harbor Creeks according to the methodology of the Lake Chelan Comprehensive Management Plan (Viola and Foster 2002) and snorkel surveys in the fall to document the presence/absence of rainbow trout and cutthroat trout young-of-year. Additionally, the mechanical treatment of the outlets of Gold and Mitchell creeks (completed in March 2011) will be periodically monitored.

Estimated Budget and Schedule:

Year	Task	Total \$	Requested \$	USFS Matching \$
2011 Apr-Jun	Install temperature data loggers and Conduct weekly spawning surveys at 3 tributary adfluvial zones. (GS11 Fish Bio and GS5 Fish Tech for 11 days)	\$2,700	\$1,350	\$1,350
Fall	Conduct snorkel surveys in 3 adfluvial tributary zones. (GS5 & GS11 Fish Bios for total of 4 crew-days)	\$1,000	\$500	\$500
Apr-Jul	USFS boat fuel	\$1,000	\$500	\$500
Apr-Jul	USFS boat driver	\$3025	\$1,512	\$1,512
Nov-Dec	Data Mgt. and Reporting (GS11 Fish Bio. for 5 person-days)	\$1,348	\$674	\$674
2010 Estimated Totals		\$9073	\$4,536	\$4,536

3.3.3 Lake Chelan Tributary Estimates of Juvenile Cutthroat and Rainbow Trout Abundance, WDFW

Beginning in 2010 and continuing into 2011, and every third and fourth year thereafter, WDFW will sample First, Mitchell, Fish, Grade, Gold, Prince, and Safety Harbor creeks to obtain information on adfluvial WSCT and RBT population abundance, age class composition and other biological characteristics. If time and man power allow all or some of the following additional seven creeks may also be sampled in 2010: Twenty-five

Mile, Pyramid, Graham Harbor, Coyote, Castle, Deep Harbor and Lone Fir creeks. If not, these creeks will be surveyed in 2011. This sequence of sampling effort will begin again in 2013 and continue into 2014 (see Section 2.2.2).

Estimated Budget and Schedule:

Year	Task	Total \$	Requested \$	WDFW Matching \$
Fall 2010 (every 3 years)	Conduct estimates of juvenile cutthroat and rainbow trout abundance in seven selected tributaries (2 Scientific Technicians and 1 Biologist for a total of 42 man-days)	\$12,706	\$6,353	\$6,353
	Travel (Lodging when needed and per diem)	\$1,050	\$1,050	-0-
	Boat and Vehicle (0.5 months)	\$740	\$740	-0-
	Supplies and equipment	\$1,050	\$1,050	-0-
	Data Mgt. and Reporting (1-Biologist for 5 man-days)	\$1,156	\$578	\$578
	2010 Estimated Totals:	\$16,702	\$9,771	\$6,931

3.3.4 Stehekin River Tributary/Side-Channel Cutthroat and Rainbow Trout Spawner Surveys, NPS

Continue to monitor trends in abundance of cutthroat and rainbow trout spawners (May through June, 2011) at 12 index sites in the lower 8 to 10 miles of the Stehekin River. Results will be used to evaluate progress towards restoration of adfluvial/fluvial westslope cutthroat trout and management efforts directed at reduction of non-native rainbow trout in the lower 8 miles of the Stehekin River (see Section 2.2.3).

Estimated Budget and Schedule:

Year	Task	Total \$	Requested \$	NPS Matching \$
2011 (Annual)	Conduct 4 to 5 biweekly spawner surveys at all tributary index (1-GS/9 Ecologist and 1-GS/6 Bio Tech for total of 50 person-days)	\$10,675	\$10,675	-0-
	Travel (Ferry and per diem)	\$1700	\$1000	\$700
	Vehicle (1.25 months @ \$800/month)	\$1000	-0-	\$1000
	Supplies and equipment	\$700	-0-	\$700
	Data Mgt. and Reporting (1- GS9 Ecol. for 20 man-days, GS12 Ecol. -2 days)	\$6145	-0-	\$6145
	2011 Estimated Totals:	\$20,220	\$11,675	\$8,545

3.3.5 Stehekin River Mainstem Cutthroat and Rainbow Trout Surveys, NPS

Despite the apparent lack of spawning cutthroat trout in Stehekin River tributary and side-channel index sites (Section 2.2.4), a number of large, 15"-18" cutthroat trout were viewed in the mainstem Stehekin River during the late fall and autumn 2010 kokanee surveys. Though not observed while spawning, these observations confirm the presence of large, potentially adfluvial cutthroat in the Stehekin River system. To compliment information collected from the tributary/side-channel spawner surveys, additional mainstem Stehekin River exploratory spring and fall snorkel surveys will be conducted in 2011 to assess progress towards restoration of adfluvial/fluvial westslope cutthroat trout

and management efforts directed at reduction of non-native rainbow trout. Two spring and one fall snorkel surveys will be conducted at four to six of the eight potential large pool/tail-out survey locations in the lower 7km of the Stehekin River mainstem. Numbers of rainbow and cutthroat trout spawners and holding fish (<6in, 6-12in, >12-18in, and >18in) will be recorded. All observed redds will also be recorded. Results will be used to evaluate and refine methods for monitoring recovery of westslope cutthroat trout in the Stehekin River.

Estimated Budget and Schedule:

Year	Task	Total \$	Requested \$	NPS Matching \$
2011	Conduct two spring snorkel surveys and one late September survey in 4-6 lower mainstem pools and tail-outs (1-GS/9 Ecologist and 1-GS/6 Bio Tech for total of 24 person-days)	\$5124	\$5124	-0-
	Travel (Ferry and per diem)	\$640	\$640	-0-
	Vehicle (0.25 months @ \$800/month)	\$200	-0-	\$200
	Supplies and equipment	\$400	-0-	\$400
	Data Mgt. and Reporting (1- GS9 Ecol. for 15 man-days, GS12 -- 2 days)	\$4800	-0-	\$4800
	2011 Estimated Totals:	\$11,164	\$5764	\$5400

3.3.6 Stehekin River Tributary/Side-Channel Juvenile Cutthroat and Rainbow Trout Surveys, NPS

This is an exploratory survey (2011) designed to supplement information from the tributary and side-channel cutthroat and rainbow trout spawner surveys (Section 2.2.3). The 2009 and 2010 spawner surveys failed to confirm the presence of cutthroat in any of the spawner survey index reaches. Results from this study would be used to confirm the presence or absence of cutthroat trout in our spawner index reaches and provide baseline abundance information for future evaluations of cutthroat recovery in the lower Stehekin.

Relative abundance (electrofishing CPE) and distribution of juvenile cutthroat and rainbow trout will be documented in a representative sample of four to five of the spawner survey index reaches during late September. Non-lethal tissue samples will be collected for genetic analyses to verify species, separating cutthroat from rainbow trout and cutthroat x rainbow hybrids following methods in Ostberg and Rodriguez (2006). A single pooled sample of tissue from 50 fish will be evaluated for this analysis. Results of this study will be used to refine future monitoring efforts focused on evaluating progress towards recovery of cutthroat trout in the Stehekin River.

Estimated Budget and Schedule:

Year	Task	Total \$	Requested \$	NPS Matching \$
2011	Fish collection in 4 to 5 spawner survey index reaches during late September (1-GS/9 Ecologist and 1-GS/6 Bio Tech for total of 20 person-days).	\$4270	\$4270	-0-
	Travel (Ferry and per diem)	\$500	\$500	-0-
	Vehicle (0.25 months @ \$800/month)	\$200	-0-	\$200
	Supplies and equipment	\$800	-0-	\$800
	USGS –BRD Lab analyses, Data Mgt. and Reporting (50 samples @ \$40/sample including Overhead)	\$2000	\$2000	-0-
	Data Mgt. and Reporting (1- GS9 Ecol. for 15 man-days, GS12 Ecol. -2 days)	\$4800	-0-	\$4800
	2011 Estimated Totals:	\$12,570	\$6770	\$5800

3.3.7 Fall Index Stream Kokanee Spawning Surveys, CPUD

Chelan PUD will conduct annual fall spawning surveys for kokanee and land-locked Chinook salmon in 2011, as recommended the NPS, USDA Forest Service, and WDFW in consultation with the LCFF. The LCFF requested, specifically, that Chelan PUD conduct the kokanee spawning surveys due to its unique expertise in conducting such surveys in the Stehekin River and tributaries to Lake Chelan since 1984. Survey methodology is described in the Lake Chelan Kokanee Spawning Ground Surveys, 2007 report (Keesee and Hemstrom, 2007). Results of 2010 kokanee spawning surveys are contained in the Lake Chelan Kokanee Spawning Ground Surveys, 2010 Final Report at the following link: http://www.chelanpud.org/departments/licensingCompliance/lc_implementation/ResourceDocuments/35980.pdf

Estimated Budget and Schedule:

The cost of conducting kokanee spawning surveys in 2011 is estimated to be \$12,000. Weekly surveys will be conducted beginning in early September and continuing through mid-October or until the kokanee run ends. Surveys will be conducted in index reaches of Blackberry Creek and Company Creek, and from their mouth up to the first impassable barriers in Fish, Prince, Safety Harbor, First, and Twenty-five Mile creeks. One survey per season will be conducted in Mitchell, Gold, and Grade creeks. Kokanee spawning in these three creeks has been low to nonexistent in recent years.

3.3.8 Kokanee Stocking Monitoring and Evaluation, WDFW

WDFW will clip adipose fins on all kokanee reared and released into Lake Chelan as part of the fish stocking program. Fin clipped kokanee will provide important information regarding the contribution of hatchery-reared kokanee to the sport fishery (especially their survival) as identified through creel surveys versus natural production. The cost of fin-clipping hatchery produced kokanee is estimated to be \$6,200 annually.

Summary of 2011 LCFP Expenditures

Measure	Estimated M&E Cost	Amount to be provided by Chelan PUD	Agency Cost-share	Task
Comprehensive Creel Surveys (WDFW)	\$20,262	\$12,583	\$7,679	Section 3.3.1
Lake Chelan Tributary Trout Spawning Surveys (USFS)	\$9,073	\$4,536	\$4,536	Section 3.3.2
Lake Chelan Tributary Estimates of Juvenile Cutthroat and Rainbow Trout Abundance (WDFW)	\$16,702	\$9,771	\$6,931	Section 3.3.3
Stehekin River Tributary/Side-Channel Cutthroat and Rainbow Trout Spawner Surveys (NPS)	\$20,220	\$11,675	NPS \$8,545	Section 3.3.4
Stehekin River Mainstem Cutthroat and Rainbow Trout Surveys (NPS)	\$11,164	\$5,764	NPS \$5,400	Section 3.3.5
Stehekin River Tributary/Side-Channel Juvenile Cutthroat and Rainbow Trout Surveys (NPS)	\$12,570	\$6,770	NPS \$5,800	Section 3.3.6
Fall Index Stream Kokanee Spawning Surveys (PUD)	\$12,000	\$12,000		Section 3.3.7
Kokanee Stocking Monitoring and Evaluation – Fin Clipping (WDFW)	\$6,200	\$6,200		Section 3.3.8
Total M&E Survey Costs	\$108,190	\$69,299	\$38,891	
Tributary Barriers			N/A	Section 3.1
Fish Stocking	\$30,000	\$30,000	N/A	Section 3.2
TOTAL	\$138,190	\$99,299	\$38,891	

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